CAMBRIDGE

Preparing Students for University and Future Life Beyond Examinations

Jessica Jia

4/13/2025

CAMBRIDGE

A-Level Cambridge Programme learner
Math/Further Math/Physics/Chemistry/Economics/EFL

University of Oxford, MEng Engineering Science

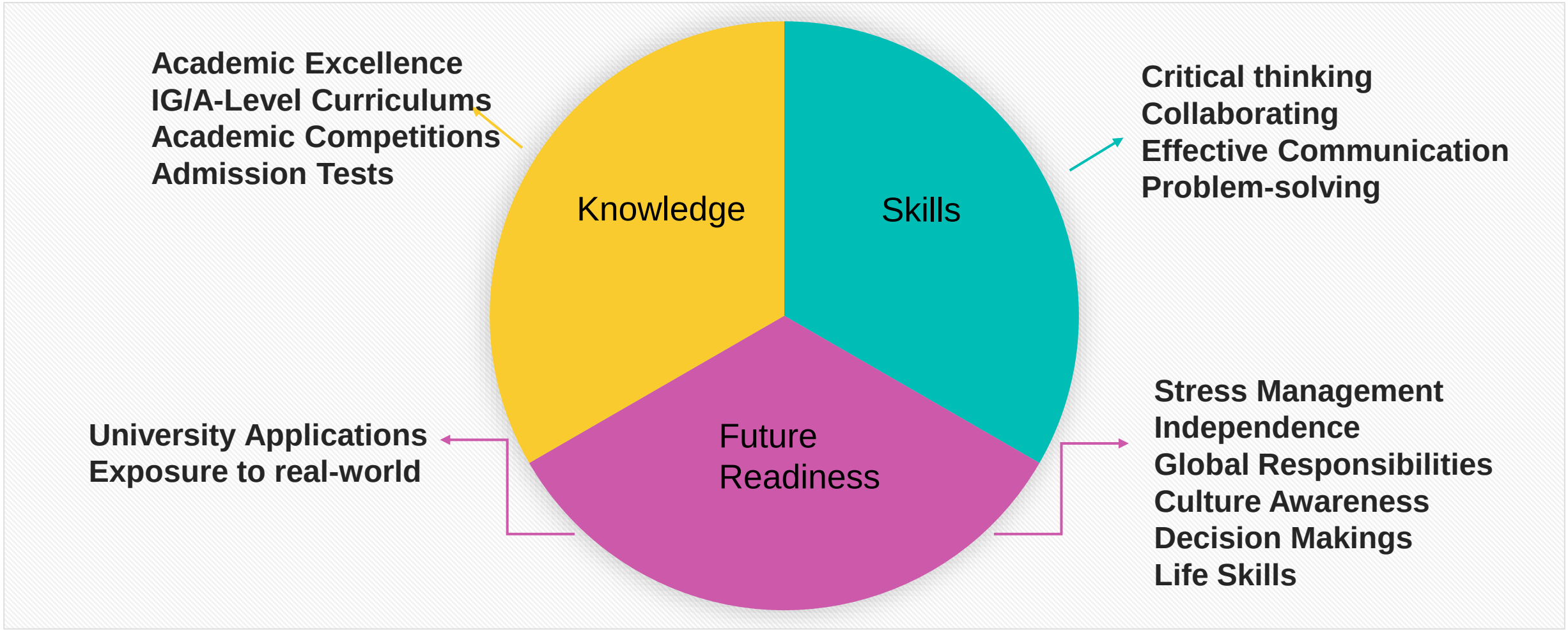
Jessica Jia

Further Mathematics Teacher, Head of Guidance Office, Assistant Principal

Shenghua Zizhu Academy

CAMBRIDGE

Essential Elements for University and Future

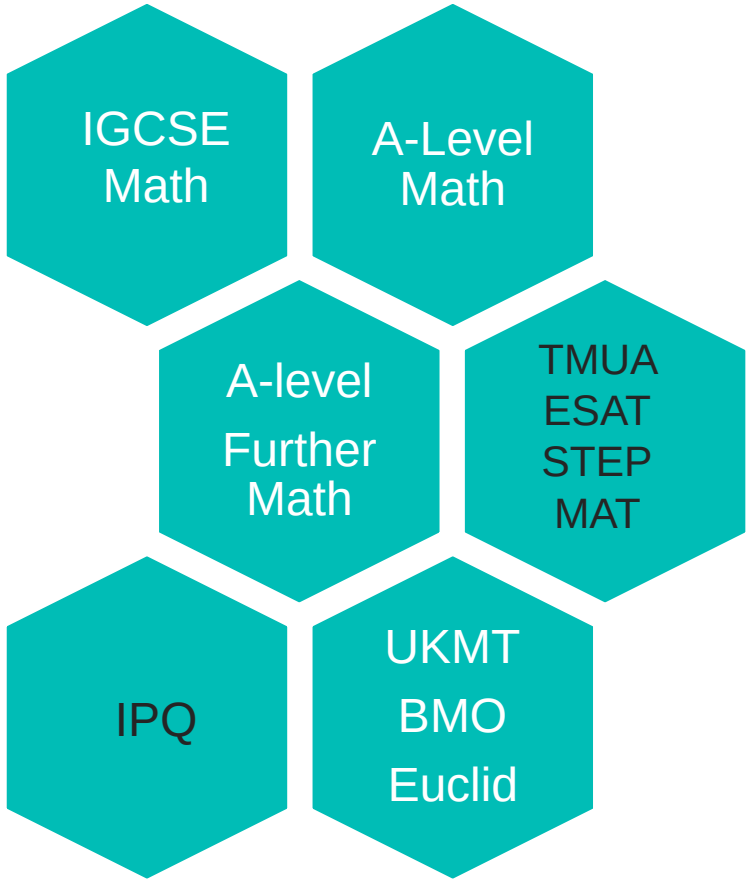


CAMBRIDGE

As a Mathematics Teacher

CAMBRIDGE

Knowledge in depth



Thursday FEB 27

UWATERLOO MATH WORKSHOP

ROBERT GARBARY

Associate Professor, Faculty of Mathematics, University of Waterloo

Have fun with Math!

Join us for an engaging CEMC workshop designed to inspire a love for mathematics and computer science! Led by Professor Robert, this interactive session will challenge you to think critically and creatively as they tackle exciting math problems. Learn tips, tricks, and free resources to enhance your problem-solving skills, while discovering the importance of math education in today's global economy. Let's have fun stretching our math muscles together!

Professor Robert obtained a Master and PhD in Pure Mathematics at University of Waterloo, finishing in 2015. He has been a member of the CEMC ever since. He is heavily involved with the creation of all CEMC mathematics contests, and loves presenting to students about problem solving.

A Triangle of area 770 cm2 is divided into 11 regions of equal height by 10 lines that are all parallel to the base of the triangle. Starting from the top of the triangle, every other region is shared, as shown.

What is the total area of the shaded regions.

In the workshop, we are going to

- Learn new problem-solving strategies to solve problems as picture on the left.
- Solve some math problems together!
- How can math drive advancement in research?
- What career paths are available for math students?
- Learn tips, tricks and free resources to enhance your math and cs skills.
- Answer any questions you may have about studying in Canada, University life, UWaterloo, and more.

Questions?

Contact- Amy at a222lin@uwaterloo.ca

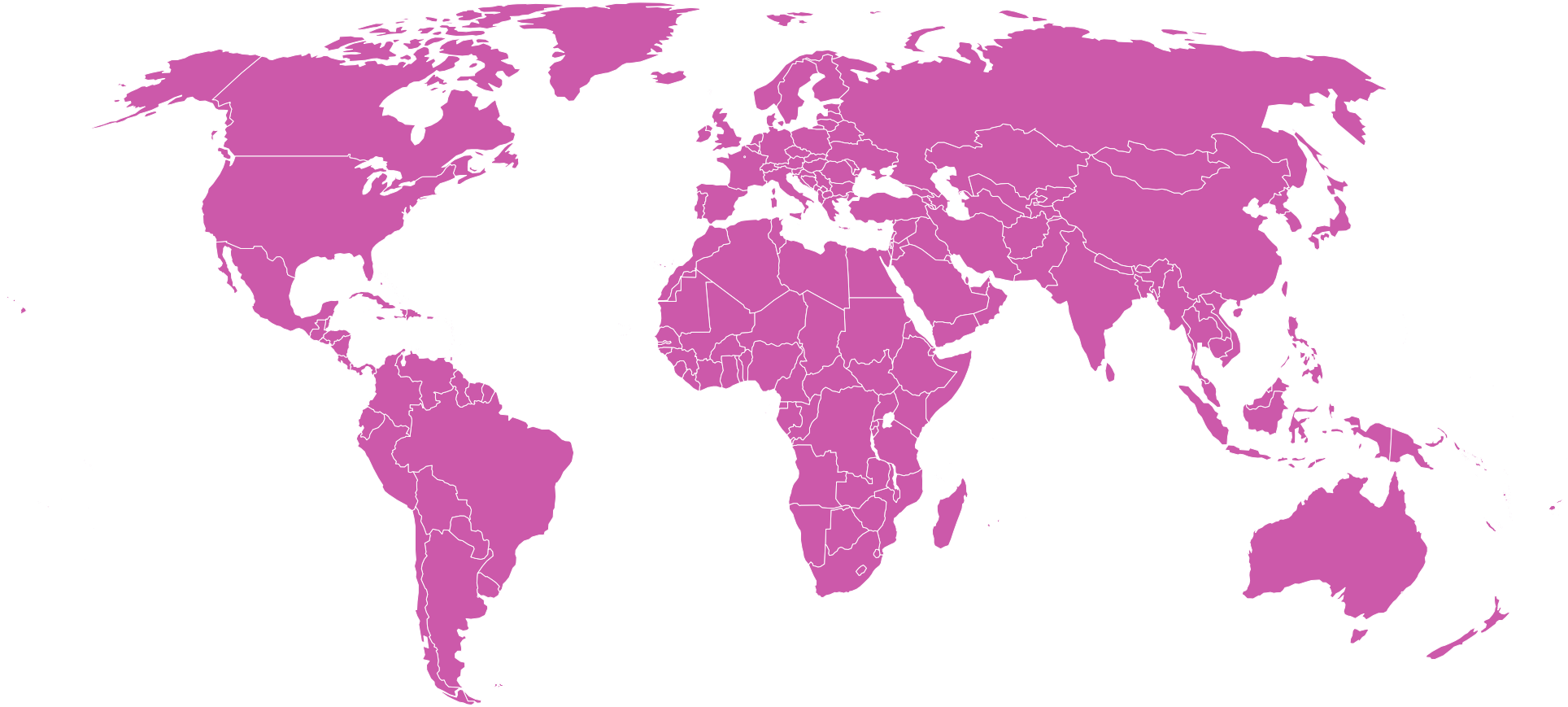
UNIVERSITY OF WATERLOO

CAMBRIDGE

As a Guidance Counsellor

CAMBRIDGE

2025 Practice: Muti-destination applications



UK
US
Canada
Australia
HK SAR
France
Netherland
Japan
Singapore
Belgium
New Zealand
Ireland

CAMBRIDGE

Company and University Lab Visits

Support from Parents and Zizhu Group

- 华师大生态与环境科学学院：**生态岛**参观
- **Ecological Island Quadrat Experiment**

- 华师大心理与认知科学学院：**VR**实验体验
- **Virtual Reality Interaction Experiment**

- 紫丹智能制造中心：**包装印刷工艺**介绍
- **Production Line of Food Packaging**

- 中国银行外滩支行：**外汇**知识讲座
- **Exchange Trading Market**

CAMBRIDGE

Science investigation: The **effect of different colors of light toward the growth of plants**

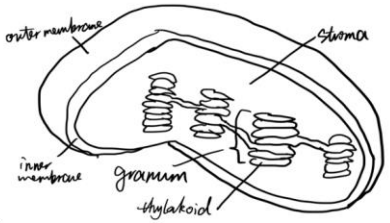
purpose:

To find out which color of light（red, green or blue）will most facilitate the growth of ormosia.

Background knowledge:

Equation: $6CO_2 + 6H_2O + light\ energy \rightarrow C_6H_{12}O_6 + 6O_2$

Appearance of chlorophyll:



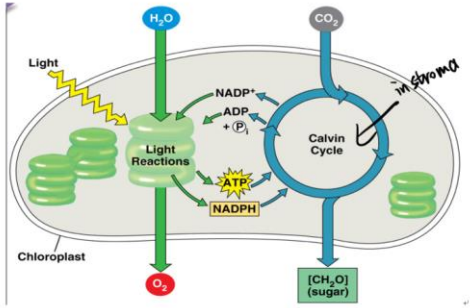
Photosynthesis process:

1.light dependent stage:

linear electron flow: At photosystem 2, Photon provide energy for chlorophyll on light harvesting complexes, then a pair of chlorophyll a be activated by light energy in reaction centre complex and reduce the primary electron acceptor. The electron transport along electron transport chain to the photosystem 1, steps are repeated and electron transferred along ETC finally to the NADP+ to form NADPH. ATP produced during the electron transfer.

Photolysis: H_2O split to provide e- for chlorophyll and O_2 formed at the meantime.

2.Calvin cycle: rubisco fix CO_2 to RUBP, then through a range of reactions, G3P is produced by reduction which use to make glucose and other components.



Pigments absorb different λ of light

chlorophyll – absorb violet-blue/red light, reflect green

- chlorophyll a (blue-green):, *directly* used in light reaction, converts solar to chemical E(main)
- chlorophyll b (yellow-green): conveys E to chlorophyll a(accessory pigments)
- carotenoids (yellow, orange): photoprotection, broaden color spectrum for photosynthesis(accessory pigments)

Experimental material:

1. petri dish
2. tissues
3. mung bean seeds
4. flowerpot
5. nutrient soil
6. pvc colored cellophanes
7. small shovel

Experimental procedure:

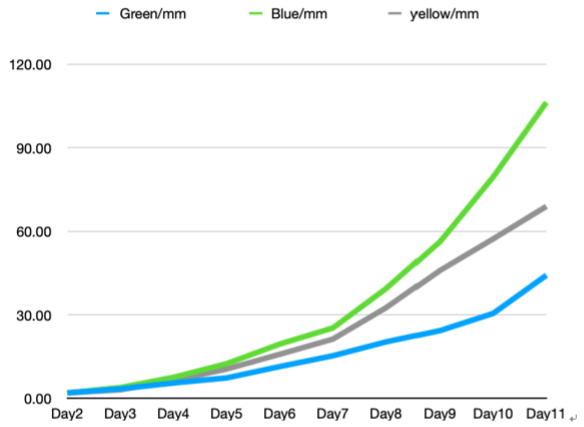
1. First, choose healthy, undamaged mung bean seeds;
2. Put them into petri dish with wet tissue and last for 1 day;
3. Transfer the mung bean sprouts into soil in a long flowerpot and watering until the soil turn darker;
4. Put 10 sprouts into each group, and cover them with pvc colored cellophane;
5. Placing them at still to give enough sunlight;
6. water once everyday and record each beens height;
7. Calculate a mean for each group and include in a sheet.

Result:

Height of stem: blue>yellow>green

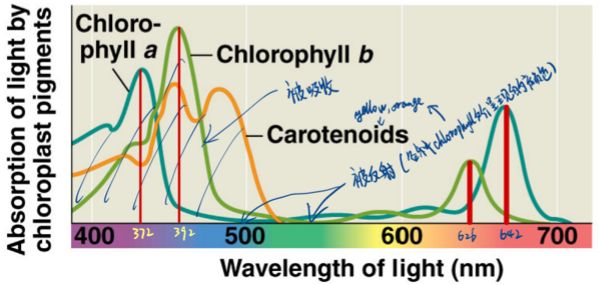
Colors of light	Green/mm	Blue/mm	yellow/mm
Day1	0.00	0.00	0.00
Day2	2.00	2.00	2.00
Day3	3.45	3.93	3.12
Day4	5.57	7.60	6.43

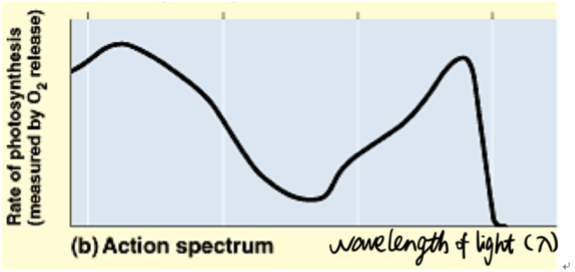
Day5	7.38	12.49	10.57
Day6	11.46	19.55	15.88
Day7	15.34	25.33	21.33
Day8	20.32	39.46	32.59
Day9	24.37	56.34	46.00
Day10	30.56	79.58	57.33
Day11	44.25	106.33	69.00



Conclusion:

Beans grow under blue light grows fastest because the absorption of light by chlorophyll a, chlorophyll b, and carotenoids in the plants all peak at the blue-ends of the spectrum, which is about 392nm in wavelength. The absorption for green and yellow light is minimum for all three pigments. As more light absorbed by the plant, the rate of photosynthesis will be faster.





Reflection:

-some of them did not grow properly which may due to intraspecific competition for nutrients

-random choosing of seeds may cause discrepancies in quality which may affect results

-darker blue cellophane used than other colors might affect the effectiveness of absorption of light(with higher intensity)

-different quantity of watering for each group due to no standard methods and apparatus

-different size of pvc colored cellophane might affect CO2 concentration for each group

CAMBRIDGE

As School Leader

CAMBRIDGE

External Resources For School Development

Parents Engagement

University Feedback

Alumni Network

CAMBRIDGE

Feedback from Universities

Imperial College London EEE department

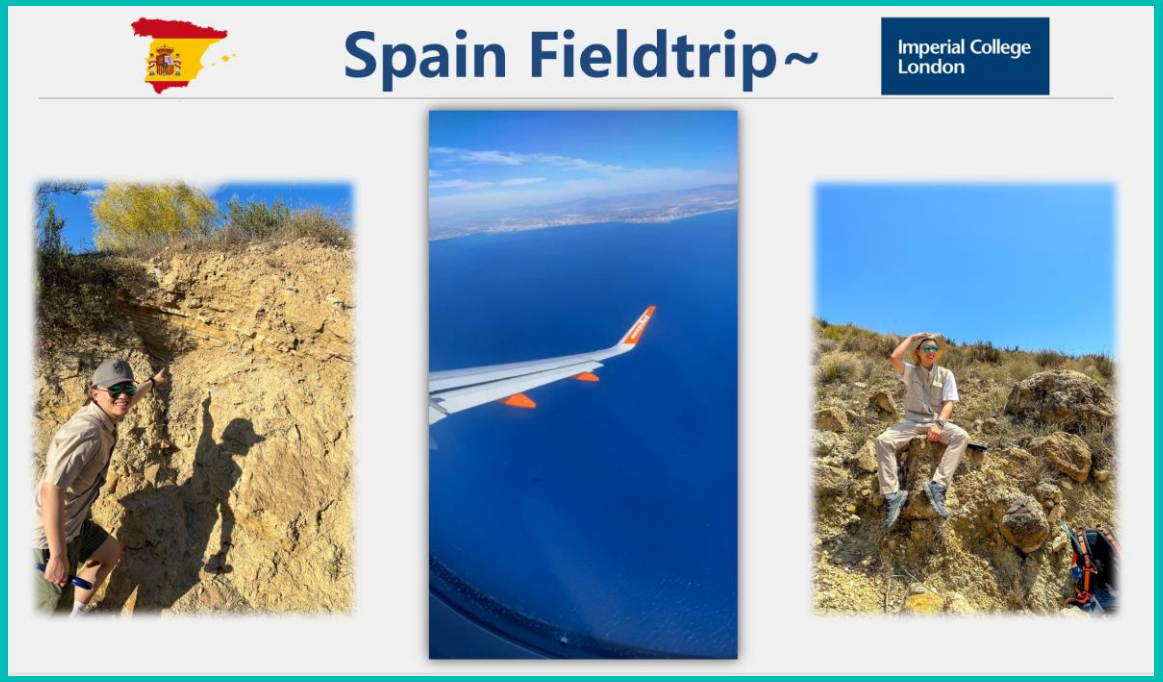
Strength:
Academic Performance

Threats:
Collaborations
Groupworks
English Speaking
Culture exchange

CAMBRIDGE

Feedbacks from Alumni

- 2022-2025 Imperial College London
- MSc Earth Science
- Field trips & internships?



CAMBRIDGE

Feedbacks from Alumni
Time Management

Wait! Let's think about those...

你也许会喜欢HKU:

- I LIKE making things happen...
- I LIKE gathering with people who are better than me...
- I LIKE relying on myself to bring 0 to 1...
- I LIKE exploring and trying weird ideas...
- I HATE remaining idle, even just one week...

你也许会讨厌HKU:

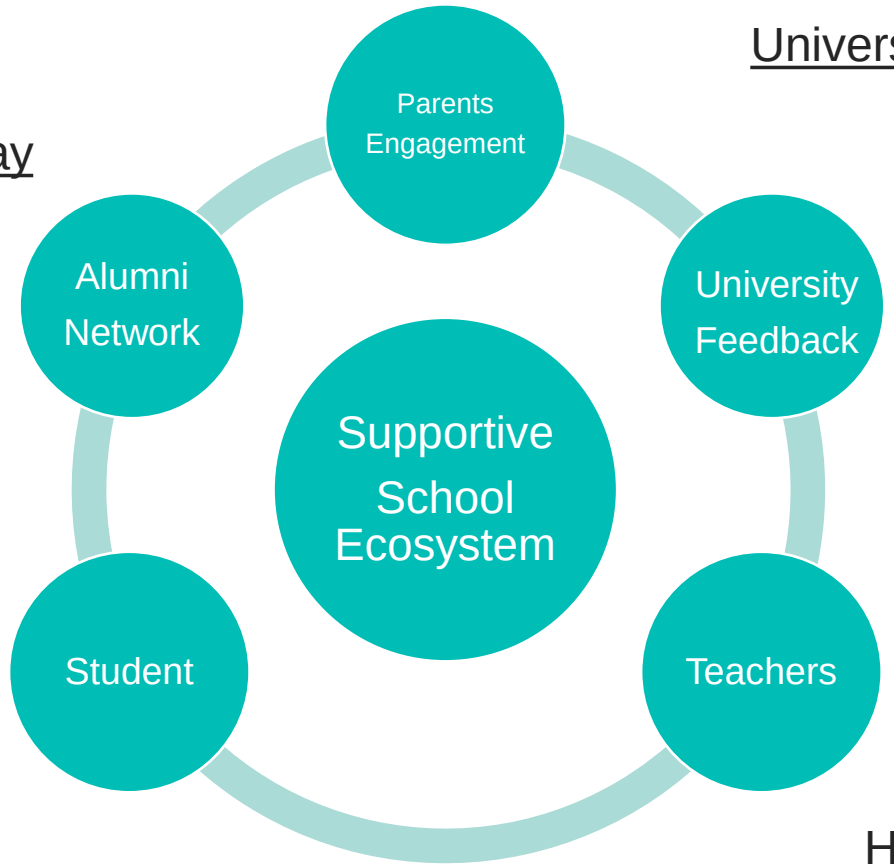
- I LIKE ultimate control of my own time...
- I LIKE more freedom so I could stop and relax anytime...
- I LIKE a larger city with more leisure activities to do...
- I HATE intense competitions...
- I HATE being judged by others all the time...

王嵩越

2021-2025 HKU Fintech

CAMBRIDGE

Build a supportive school ecosystem



Faulty Development

AI tools

Career Planning

University Prep

Career Day

Innovations

College Fairs

Academic Achievements

Curriculum Design

Diversity of Courses

Academic Competitions

School Culture

Holistic Development

CAMBRIDGE

Thank you!

cambridge.org/internationaleducation